BUNN *Espress* ™

ESPRESSO/CAPPUCCINO COFFEE BREWER

P-176

ES•1A ™

OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

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10712.0000A 7/93 ©1993 Bunn-O-Matic Corporation

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BUNN-O-MATIC COMMERCIAL PRODUCT WARRANTY

Bunn-O-Matic Corp. ("Bunn") warrants the equipment manufactured by it to be commercially free from defects in material and workmanship existing at the time of manufacture and appearing within one year from the date of installation. This warranty does not apply to any equipment, component or part that was not manufactured by Bunn or that, in Bunn's judgement, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The agents, dealers or employees of Bunn are not authorized to make modifications to this warranty or to make additional warranties that are binding on Bunn. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

The Buyer shall give Bunn prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois, 62708-3227. If requested by Bunn, the Buyer shall ship the defective equipment prepaid to an authorized Bunn service location. If Bunn determines, in its sole discretion, that the equipment does not conform to the warranty, Bunn shall repair the equipment with no charge for parts during the one year warranty period and no charge for labor by a Bunn Authorized Service Representative during the one year warranty period. If Bunn determines that repair is not feasible, Bunn shall, at its sole option, replace the equipment or refund the purchase price for the equipment.

THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AS SPECIFIED HEREIN, TO REPAIR OR, AT BUNN'S SOLE OPTION, REPLACEMENT OR REFUND. Bunn shall not be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

The notices on this brewer should be kept in good condition. Replace unreadable or damaged labels.

This equipment is to be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

00656.0000

WARNING

HAZARDOUS VOLTAGE

UNPLUG BREWER BEFORE REMOVING!

12652.0000

⚠ CAUTION

HOT
Liquid-Steam-Surfaces

24246.0000

NOTICE

160 psig max operating pressure

24247.0000

⚠WARNING

- Fill water tank before turning -on thermostat or connecting appliance to power source.
- Use only on a properly protected circuit capable of the rated load.
- Electrically ground the chassis.
- Follow national/local electrical codes.
- Do not use near combustibles.

FAILURE TO COMPLY RISKS EQUIPMENT DAMAGE, FIRE, OR SHOCK HAZARD

READ THE ENTIRE OPERATING MANUAL BEFORE BUYING OR USING THIS PRODUCT

THIS APPLIANCE IS HEATED WHENEVER CONNECTED TO A POWER SOURCE

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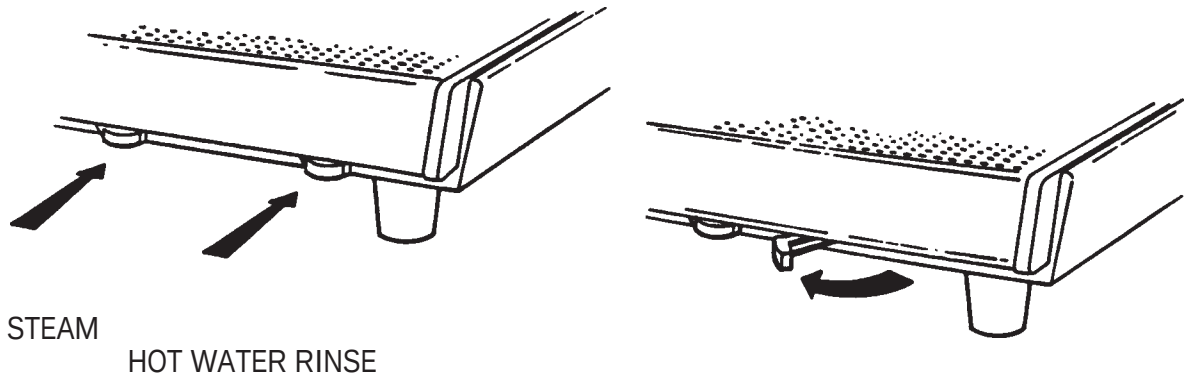
00831.0000

Hot water rinse dispensing tube and steam dispensing tube

The ES•1A™ is equipped with a hot water rinse dispensing tube and a steam dispensing tube. They are operated by moving the levers located at the bottom of the machine from to side-to-side; they can be placed in a continuously open position if required. The outlet tubes can also be rotated.



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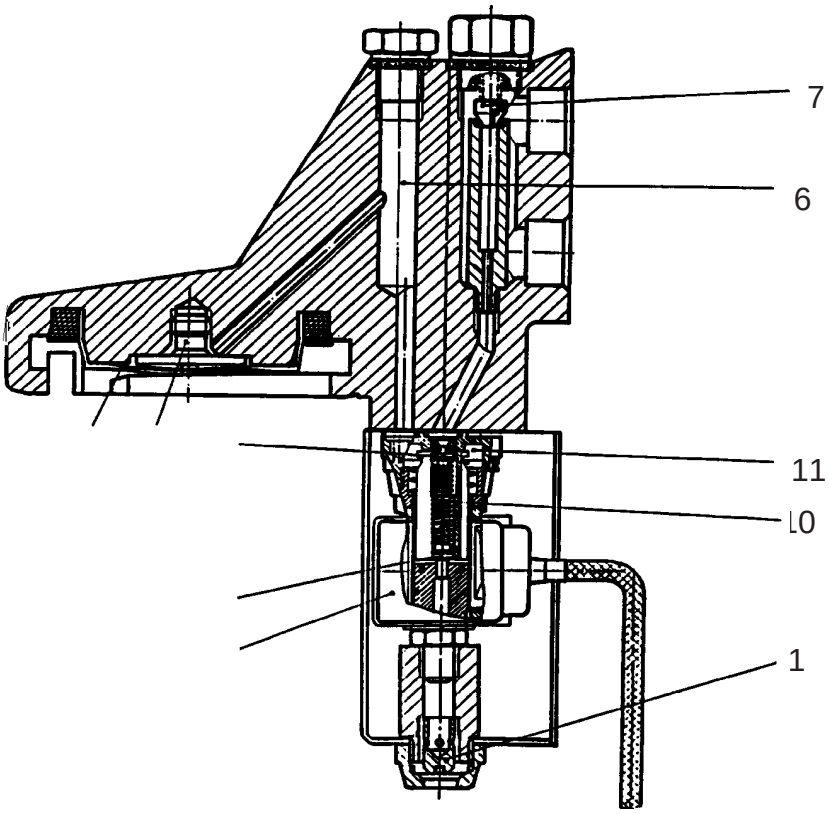
Boiler

The boiler is made of copper plating, 1.5 mm thick; it operates under a pressure between 1.1 to 1.3 bar (16-18.8 psi). This is measured by means of a pressure gauge with a scale from 0 to 2 bar (0-29 psi). The safety valve assures that boiler pressure never exceeds the safety limits; it automatically discharges steam when pressure inside the boiler exceeds 1.8 bar (26.1 psi). The water heating element is an electric resistance unit controlled by a pressure switch. This switch automatically regulates the pressure of steam in the boiler. The pressure switch will automatically shut off the heater when necessary.

Electrical pump

The electric pump incorporated in the machine is required to obtain optimum water pressure of 9 bar (130 psi) for espresso extraction. If water pressure from the tap exceeds 5 bar (73 psi), a pressure reducer should be installed to avoid damaging the machine. If a pressure reducer is required, it should be installed in the water inlet pipe just before the water conditioner or electric-pump.



Group head (Espresso extraction chamber)

The group head-espresso extraction chamber is where the coffee infusion takes place. After extraction, an electric pressure valve automatically discharges the accumulated pressure. When the coil (12) of the electro-valve receives an electric current, causing the plunger (10) to move, thus closing the discharge valve (2) and opening the water intake valve (9) allowing the water to pass towards the shower (4) through the sprayer (3). This is when the brewing process (infusion) begins.

The bubbling effect is produced by an interchange between air, contained in a bubble formed in the chamber, and water which progressively increases it's pressure on that bubble. The mixture of air and water produced then falls on coffee previously dampened by the infusion process. When the liquid extraction process of the coffee is complete, excess pressure contained in the filter holder is then released through a discharge valve (2). The atomizer (1) directs the water being discharged to the opening to avoid it's splashing outward.

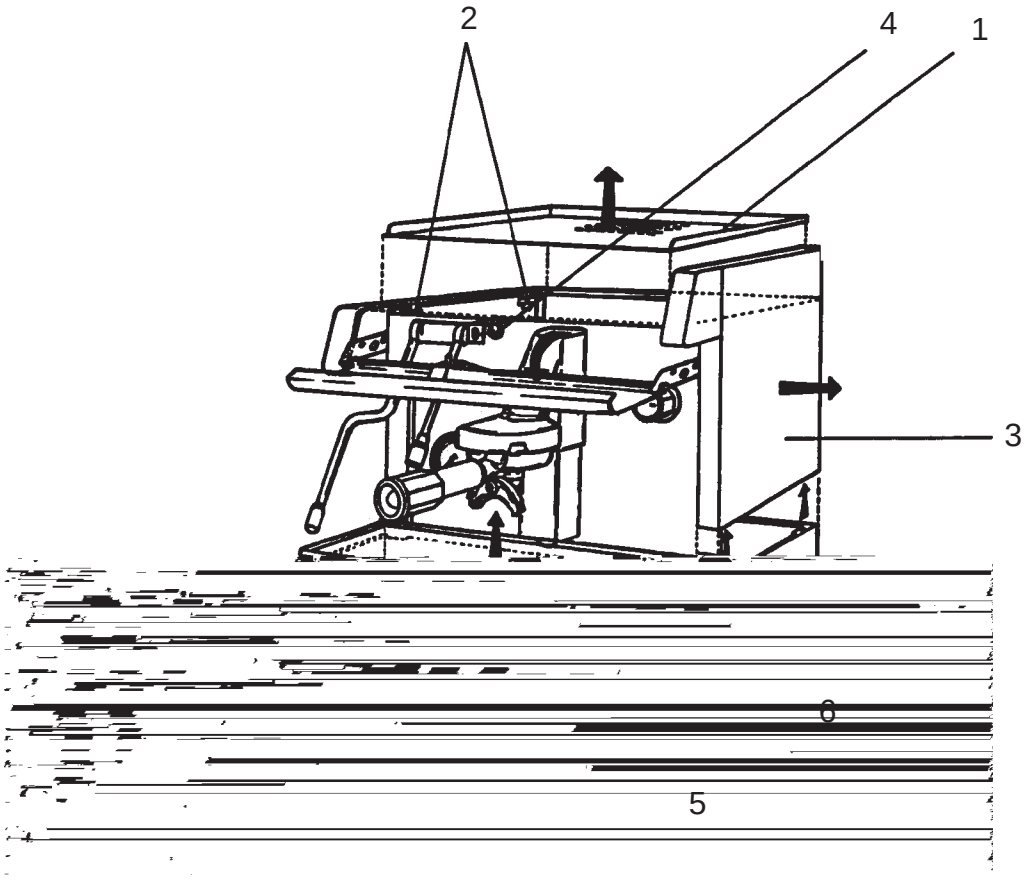
Water softener

It is essential to install a water softener to prevent any calcium build up in the boiler and hydraulic circuit.

Chassis

The chassis of the ES•1A™ is made of painted steel and the work tray is stainless steel. To reach the interior of the machine, proceed as follows:

- Remove the cup heater tray (1)
- Loosen the two screws (2) holding the side panel in place (2)
- Remove the side panel (3) by lifting it up carefully.
- By loosening the nut (4) that holds the control panel in position and by placing the front piece at a right angle, access to the interior of the control panel is obtained.
- Finally, by removing the work tray (5) and the drainage tray (6), access is gained to all the elements of the machine.



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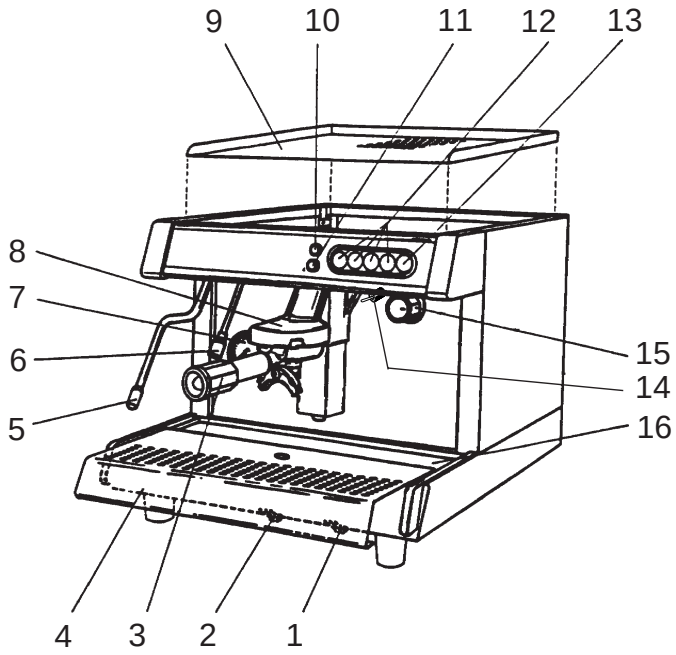
Technical features

Width	400 mm(15.7 inches)
Height	370 mm(14.5 inches)
Depth	490 mm(19.3 inches)
Net weight	30 kgs(66.12 lbs.)
Gross weight	37 kgs(81.55 lbs.)
Hydraulic feed	⅜"-19 Straight pipe BSPP
Drainage	25 mm (1.07 in)
Total brewer power	2000 W.
Electric feed	120 V. Single phase
Consumption	16.7 A.
Boiler capacity	4.0 liters (1.05 gal)



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Component identification

1 ..... Hot water rinse outlet control lever
2 ..... Steam outlet control lever
3 ..... Hand grip-filter container for coffee
4 ..... Work tray
5 ..... Steam outlet tube
6 ..... Hot water rinse outlet tube
7 ..... Pressure gauge pump/steam
8 ..... Group head espresso extraction chamber
9 ..... Cup-heater tray
10 ..... Power light
11 ..... Refill light
12 ..... Automatic dosification selector panel
13 ..... Continuous flow control button
14 ..... Program/Run toggle switch
15 ..... General ON/OFF switch
16 ..... Drainage tray

Warning alarm (visual only, not audible) on flow counter

This alarm goes off when impulses from the flow meter are not registered by the central control unit, or when a period in excess of five seconds lapses between impulses from the flow meter . If the brewer is running (i.e. pilot lamp on continually), brewer function will stop and the lamp will begin to flash. Begin trouble shooting by checking the following:

- Excessively fine grind of the coffee or excessive tamping.
- Any possible obstruction in the coffee outlet (dirty shower unit, blocked set injector, etc.).
- Electrical connections on the volumetric counter.
- Electric valve (group solenoid.
- Electrical connection on the electric valve.
- Possible breakdown in the electric pump.

In order to eliminate the alarm signal simply press any of the buttons; however, if the problem persists, the alarm will reappear every time a programmed dose button is pressed. This alarm does not effect the machine's functioning in the continuous liquid drawing mode or automatic refill.

Warning alarm (visual only, not audible) on automatic refill

This alarm goes off when the water entering the boiler does not reach its required level within a predetermined period of time. The time limit control prevents any over-filling from taking place. Once the alarm goes off, all automatic batch buttons a well as auto matic refill will not function. If the alarm goes off, check the following:

- Level probe.
- Connections of the level probe.
- Water entrance (possible blockage at input).
- Electric valve controlling the entrance of the water into the boiler.

This alarm does not impede the machine's functioning in the continuous liquid drawing mode and is not effected if the machine is disconnected from the water supply and reconnected.

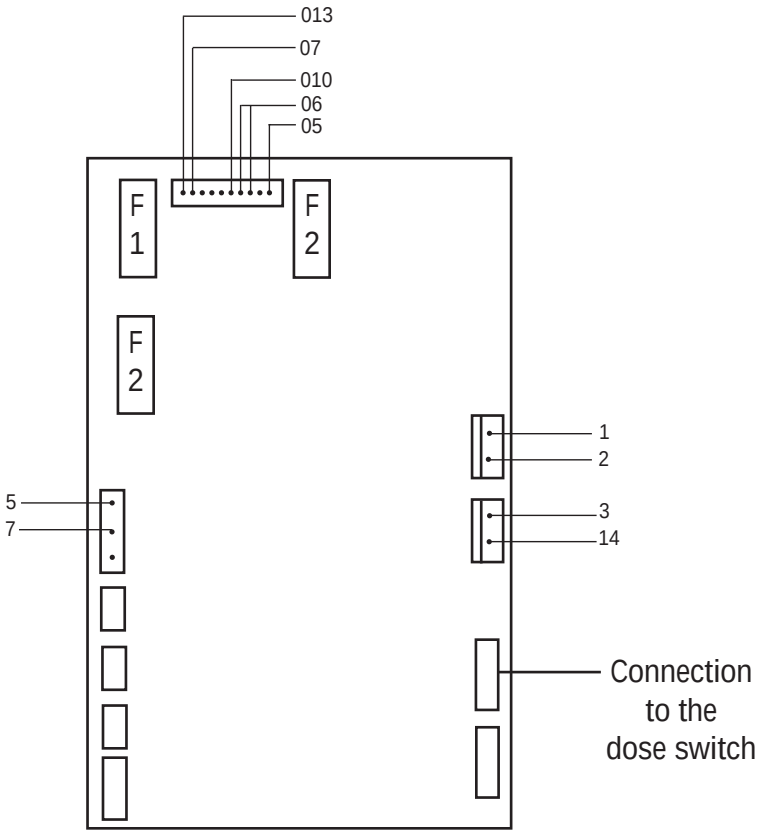
NOTE: After the problem has been solved the alarm can be reset in the following way: move the programming switch (14) to the programming position; simultaneously press the "one short" and "two short" buttons. When the alarm has been eliminated, the switch should be turned back into the "run" position.

The alarm will most likely go off when filling an empty or nearly empty boiler (such as in the event of repairs or setting up a new machine), it may happen more than once.

Central/Electronic unit

This component analyzes and controls all information received from the buttons and volumetric counter, activating the different relays and thus causing the different electric valves and the electric pump to start functioning.

The connections of the central unit, as shown on the diagrams, are divided into two parts. First of all, the connections that are marked with a zero plus a number correspond to the power feed and to the output. The connections that are marked with just a number correspond to the inputs and to the outputs of the information coming to the central unit from the volumetric counter, the electronic level or the programming switch. There is also a single connection with a flat wire for 10 conductors which corresponds to these connection with the buttons.

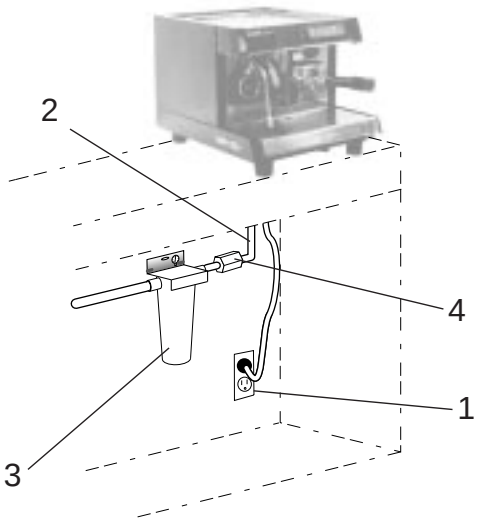


05-06 ..... 120v. feed
07 ..... Connection refill solenoid
010 ..... Output for the group solenoid valve
013 ..... Output for the electric pump
Fl ..... Feed fuse, electric pump
F2 ..... Feed fuse electric valves
F3 ..... Feed fuse for the central unit
1-2 ..... Output to the programming switch
3 ..... Connection to ground
5 ..... Feed output (-) volumetric counter (flowmeter)
7 ..... Feed output (+) volumetric counter (flowmeter)
14 ..... Connection to the level probe

Placement and installation

Once the machine has been unpacked, it should be placed on a table or counter having sufficient space for easy access to water, electricity and drainage per the following specifications.

- A water inlet pipe.
- An electric plug with ground wire.
- A drain pipe with minimum interior diameter of 35 mm.



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1 .... Three-way or two-way plug with ground wire.
2 .... Pipe with a minimum internal diameter of 35mm (braided hose is provided).
3 .... Water conditioner ⅜" flare
4 .... Strainer assembly (part # 24744.0000)

Water installation

Pipes for water and drainage connections are located in the lower front part of the machine. To reach them, raise the work and drainage trays. Connect the corresponding pipes, which are packed with the machine in the following way:

From the electric pump to the water conditioner, and from the conditioner to the tap inlet. In the event a water purifier is not installed, the connection from the electric pump should be made directly to the tap outlet. One end of the flexible drain pipe must be connected to the drainage cup section and the other end to the general drain.

NOTE: For cart applications, unit will function with pump suction line suspended into a container of water. Be sure not to run the container dry, damage to the pump will occur.

Electrical installation

Be certain that the available voltage at the installation site is the same as that on the manufacturer's data plate. This plaque is located on the left side of the machine. The electrical connection should be made directly to a wall socket equipped with a ground wire using the plug provided.

Filling

1. Make sure power switch is **OFF** and water is connected and turned **ON** before plugging in.

   NOTE - Plumbing must be connected to the brewer before proceeding.

2. Locate the ON/OFF switch knob. It is in the upper right corner of the front panel.
3. Rotate the knob to the "OFF" (farthest counterclockwise) position.
4. Plug-in the brewer.
5. Place the power switch in the “ON” position.
6. Rotate the ON/OFF Switch knob to the

(farthest clockwise) position. This allows the tank to fill with water without turning-on the heater.
7. The refill pilot light (lower indicator on the front panel) will glow and the tank will automatically fill with water.

   NOTE: Proceed as follows if the pump stops and the pilot light flashes during the fill procedure:
   a. Locate the small toggle switch on the upper right side of the front panel
   b. Carefully place the switch in the right position.
   c. Press the one-short and two-short cup brew switches simultaneously, flashing light will stop.
   d. Place the toggle switch in the left position.
   e. The filling pilot light will glow and the tank will continue to fill with water if required.

8. Water will continue to flow into the tank until full. Simply repeat steps a-e above if the pump stops again.
9. When the tank stops filling and the lower pilot light stops flashing, rotate the general ON/OFF switch knob to the "ON" (center) position.
10. Allow the water in the tank to heat to the proper temperature before using the brewer.
11. Press any of the automatic brewing buttons. This causes hot water to circulate and the warming of the extraction chamber to begin.

Coffee extraction

1. Place ground coffee in the filter holder, shake it level, and compress the bed of coffee with the tamper on the grinder.
2. Clean the edge of the filter holder with the palm of the hand before locking it on to the set. This will prevent any coffee particles from imbedding themselves into the group head gasket.
3. Place the filter holder in the group head and twist it to the right until tight. Do not force the filter holder excessively.
4. Press any one of the four dosification buttons (12) or the continuous draw button (13) according to the dose required.
5. Extraction ends automatically. If the continuous liquid dispensing button (13) was pressed, dispensing can be stopped by pressing on any one of the five buttons. The automatic liquid extraction caused by using one of the four dosification buttons (12) can be stopped by pressing any of the dosification buttons.

   NOTE: The automatic selections have regulated doses, these can be set between 0 and 500 cc

The machines leave the factory with regulators adjusted for the following approximate amounts:

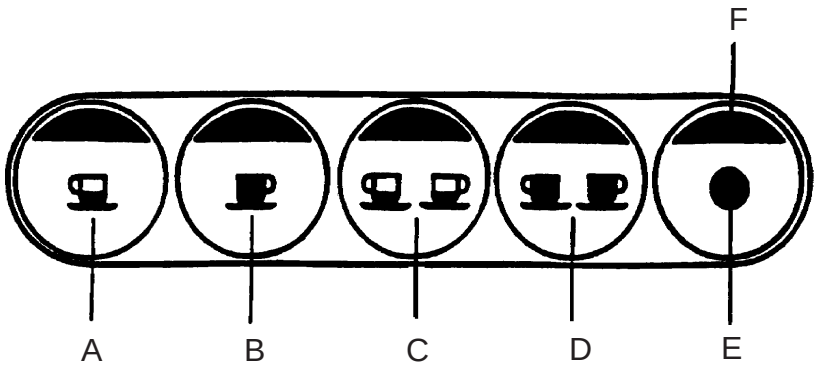
One short coffee:	50 cc of water
One normal coffee:	100 cc of water
Two short coffees:	100 cc of water
Two normal coffees:	200 cc of water

It should be noted that these doses have been set without coffee in the filter holder. With coffee, the

volumes are slightly less. Should different volumes be required, refer to (Programming dosifications)

Control panel

This panel is composed of five buttons (A, B, C, D, and E) and a pilot lamp (F). The buttons A, B, C and D correspond to the selections of four possible dosifications. Button E is for continuous liquid dispensing; and the (F) is the pilot light.



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Programming dosifications

To change the factory set dosages, set the Program/Run toggle switch to the "Program" (right) position.

Depending on the dosage you wish to change (1 cup or 2 cups), fill the filter-holder with the proper amount of ground coffee and place in the group head infusion unit of the machine. Press the corresponding dosage push-button and hold for approximately 3 seconds. The brew light will be flashing. Once the desired amount of coffee is achieved press any of the dosage push-buttons to save the new setting in memory. Return the "Run/Program" switch lever to the "Run" (left) position.

NOTES:
1. This operation must be repeated for each dosage you wish to reprogram.
2. The push-buttons which were not reprogrammed will continue using the previous dosage sets.
3. The "Continuous dosage" is not programmable.

Pre-infusion programming

Pre-infusion causes a non-programmable amount of brew water to be injected into the bed of coffee at the beginning of the brew cycle; thus wetting the coffee, this is followed by a short delay, followed by the programmed amount of dispense.

In order to check whether or not the pre-infusion has been turned on, turn the programming switch (14) to the "Program" (right) position. If the pilot lamp (F) comes on, pre-infusion is on. To eliminate the pre-infusion, press the continuous dosage button (E) until the pilot lamp (F) turns off; then return the programming switch to the "Run" position.

Cleaning

1. The use of a damp cloth rinsed in any mild, nonabrasive, liquid detergent is recommended for cleaning all surfaces on Bunn-O-Matic equipment.

2. Clean the gasket that seals the filter & the group head, located under the group head. Ground coffee buildup on this gasket will result in a bad seal of the filter holder, and will leak brewed coffee onto the outside of the filter holder when brewing. This is why it is important to wipe excess coffee off of the rim of the filter prior to insertion in the group head.

4. The drip tray is to be cleaned daily. Remove the grill and drip pan, wash them out thoroughly, and place them back into the brewer.

5. The steam wand must be cleaned after each use. Wipe with a damp cloth immediately after use. At the end of the day, run the steam wand for about 15 seconds to clean it out.

6. The group head is to be cleaned daily.
   a. Unit needs to be heated to normal operating temperature. This provides very hot water that will do the best cleaning.

   b. Install the “No hole” filter basket into a filter holder (porta filter).

   c. Put a teaspoon of any espresso cleaner or automatic dishwasher detergent into the “No hole” filter basket.

   d. Install the filter holder as if brewing espresso.

   e. Press the continuous brew switch (does not pertain to semi-automatic units) to activate the brew cycle.

   f. Allow the cycle to run for about 20 seconds.

   g. Press the continuous brew switch to stop the brew cycle.

   h. Repeat Step 5 except only allow the brew cycle to run for 10 seconds each time.

   i. Repeat Step 6 until the water being discharged is clear. This may be viewed by noting the liquid that’s being discharged onto the drip tray.

   j. Remove filter holder (porta filter) containing the “No hole” filter basket.

   k. Rinse thoroughly by turning brew cycle on and off several times.

   l. Repeat process for all groups.

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department at 1-800-637-8606.

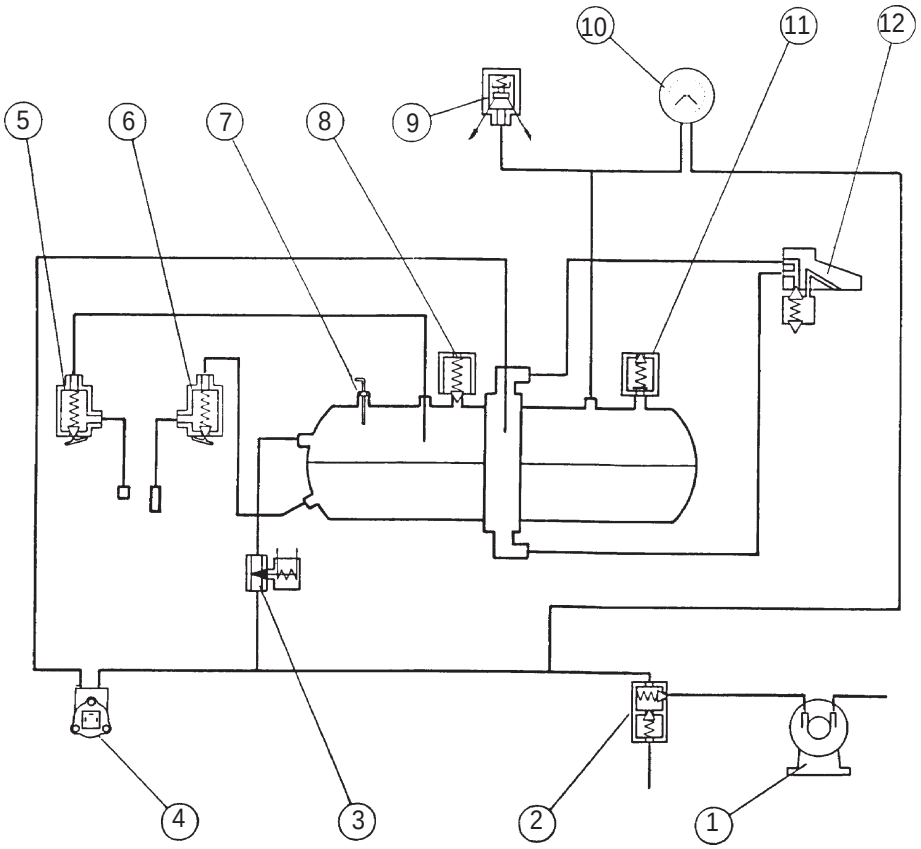
- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This brewer is heated at all times unless disconnected from the power source. Keep away from combustibles.
- All electronic components have 120 volt ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a switch contact or a loose connection at a terminal or crimp.

WARNINGS

- Exercise extreme caution when servicing electrical equipment.
- Disconnect the brewer from the power source when servicing, except when specified.
- Follow recommended service procedures.
- Replace all protective shields and safety notices.

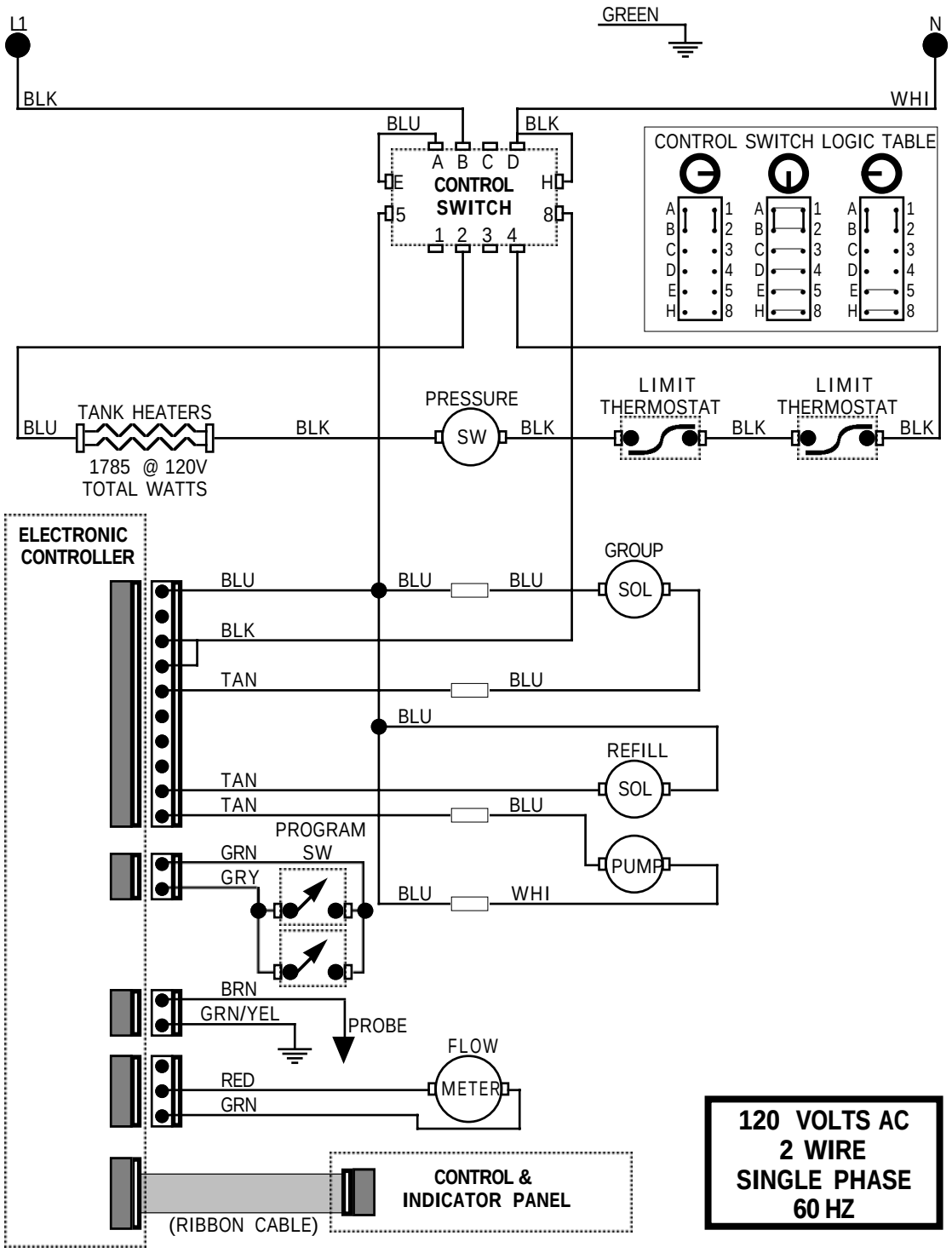
Problem	Probable cause	Remedy
Equipment will not operate	No power or incorrect voltage	Connect the brewer to the power source. Check for proper voltages. Check circuit breaker/fuse.
	Toggle switch (Master on/off)	Must be in the on position. Pilot lamp will light.
Brew cycle will not start	No water	Check plumbing and shut off valves.
	Water strainer or water conditioner	Direction of flow arrows must be pointing toward the brewer.
		Remove the strainer and/or filter cartridge of the water conditioner and check for obstructions. Clear or replace.
Pushing any of the automatic batch buttons results in only a short flash of the brew light. Will not brew. Continuous brew works as well as automatic refill.	Dose sizes were set with a defective flowmeter. The result was no flow pulses reached the electronic controller. during the dose size programming.	Replace flowmeter. Repair loose connector in wiring between flowmeter and electronic controller.

Problem	Probable cause	Remedy
Brew cycle will not start (cont.)	Solenoid valve	Check voltage at terminals. If voltage is present when the dose switch is pressed, disconnect power supply, remove wires from coil terminals and check coil terminal continuity. If there is continuity replace solenoid.
	Pump	When start switch is pressed, pump should turn on immediately. If this dies not happen, check voltage at terminal block on the pump. If correct voltage is present, use a flat-blade screwdriver to turn the motor shaft on the rear end of the motor to see if the pump itself is locked up. If the shaft does not turn, replace pump assembly.
Water is not hot or long recovery time.	Solenoid valve	Remove the solenoid valve and clear it of any obstructions. Rebuild or replace the valve if necessary.
	Limit thermostat(s)	Disconnect power supply , remove all wires check across limit terminals for continuity. If no continuity, replace limit thermostat(s).
	Tank heater	Check tank heater terminals for correct voltage. If voltage is present and machine is not heating properly, replace tank heater.



1 ..... Electric pump
2 ..... Check valve
3 ..... Refill solenoid
4 ..... Flowmeter
5 ..... Steam valve
6 ..... Hot water rinse valve
7 ..... Liquid level probe
8 ..... Pressure relief valve
9 ..... Pressure switch
10 ..... Pressure gauge (Pump/Steam)
11 ..... Compensation valve (anti-siphon)
12 ..... Group head espresso extraction chamber

SCHEMATIC WIRING DIAGRAM
ES•1A



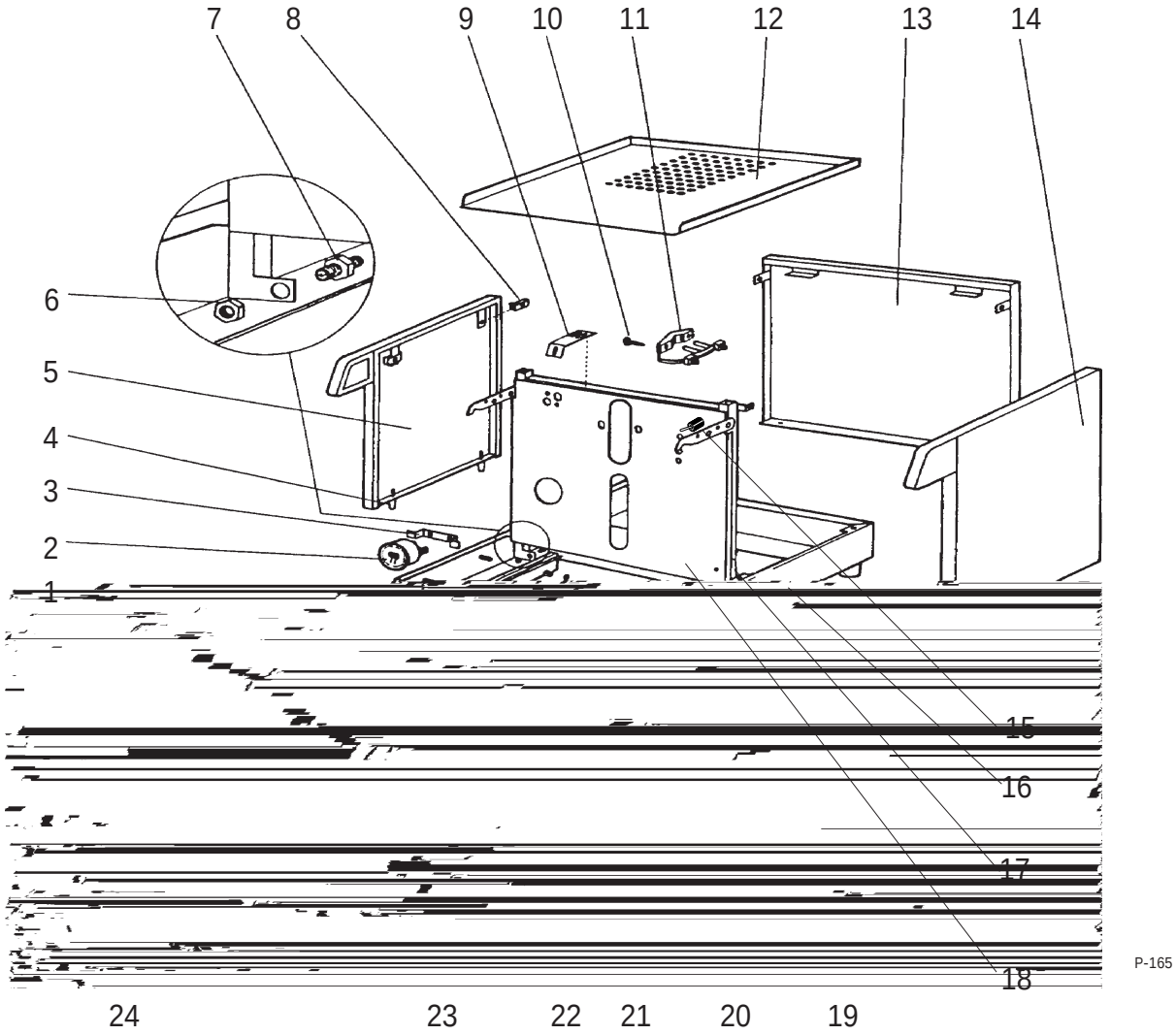


Figure	Description	Part Number
1	Drip tray guide (left)	23654.0000
2	Pressure gauge	24210.0000
3	Pressure gauge mounting bracket	24212.0000
4	Locating pin-lower side panel	23648.0000
5	Side panel (left)	23669.0000
6	Nut	23933.0000
7	Outlet fitting	23610.0000
8	"U" clip	23638.0000
9	Center mtg. brkt., front panel	23652.0000
10	Screw	24004.0800
11	Cable clamp	23635.0000
12	Top cup warmer panel	23658.0000

Figure	Description	Part Number
13	Back panel	23656.0000
14	Side panel (right)	23668.0000
15	Programming switch-toggle	22816.0000
16	Base frame	23667.0000
17	Machine frame chassis	23660.0000
18	Chrome front panel	23659.0000
19	Drain cup	23634.0000
20	Drip tray guide (right)	23653.0000
21	Rubber foot	23633.0000
22	Nut	24045.0101
23	Drip tray	23655.0001
24	Drip tray grate	23657.0000

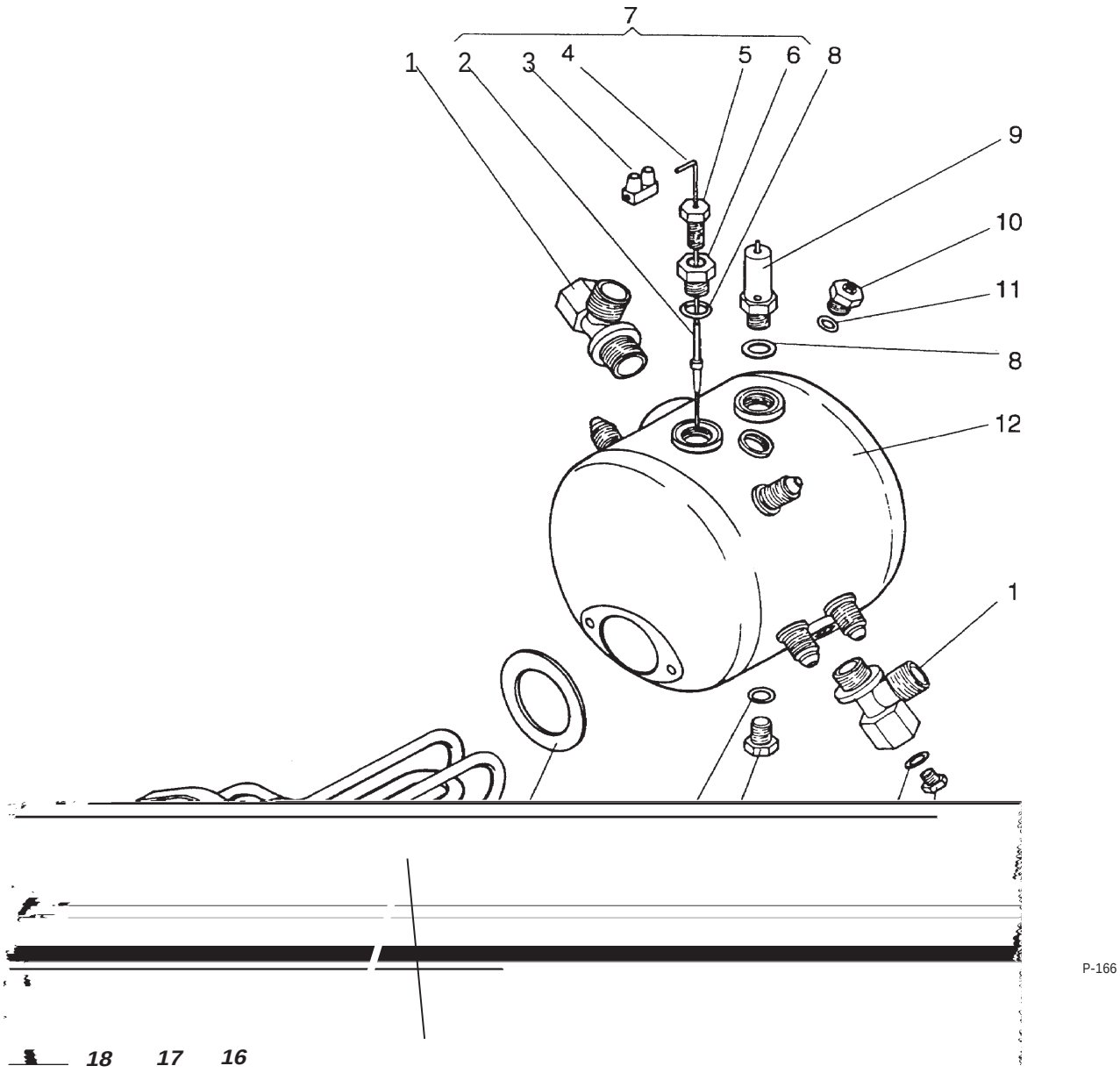


Figure	Description	Part Number
1	Inlet water fitting	23609.0000
2	Grommet liquid level probe	23608.0000
3	Terminal block	22814.0000
4	Probe, liquid level	23607.0000
5	Compression nut, level probe	23629.0000
6	Mounting nut, level probe	23606.0000
7	Probe assy. hex fitting	23605.0000
8	Seal washer	23628.0000
9	Pressure pop-off valve	22575.0000
10	Compensation valve	23603.0000
11	Flat washer	24030.0001
12	Tank	23647.0000
13	Drain plug, heat exchanger	23602.0000
14	Drain plug, tank	23601.0000
15	Tank heater/Gasket kit	24274.1001
16	Flat washer	24029.0000
17	Screw	23934.0000
18	Tank heater terminal shorting bar	23598.0000
19	Limit thermostat (not illustrated)	04680.0004
20	Band clamp (not illustrated)	23468.0000

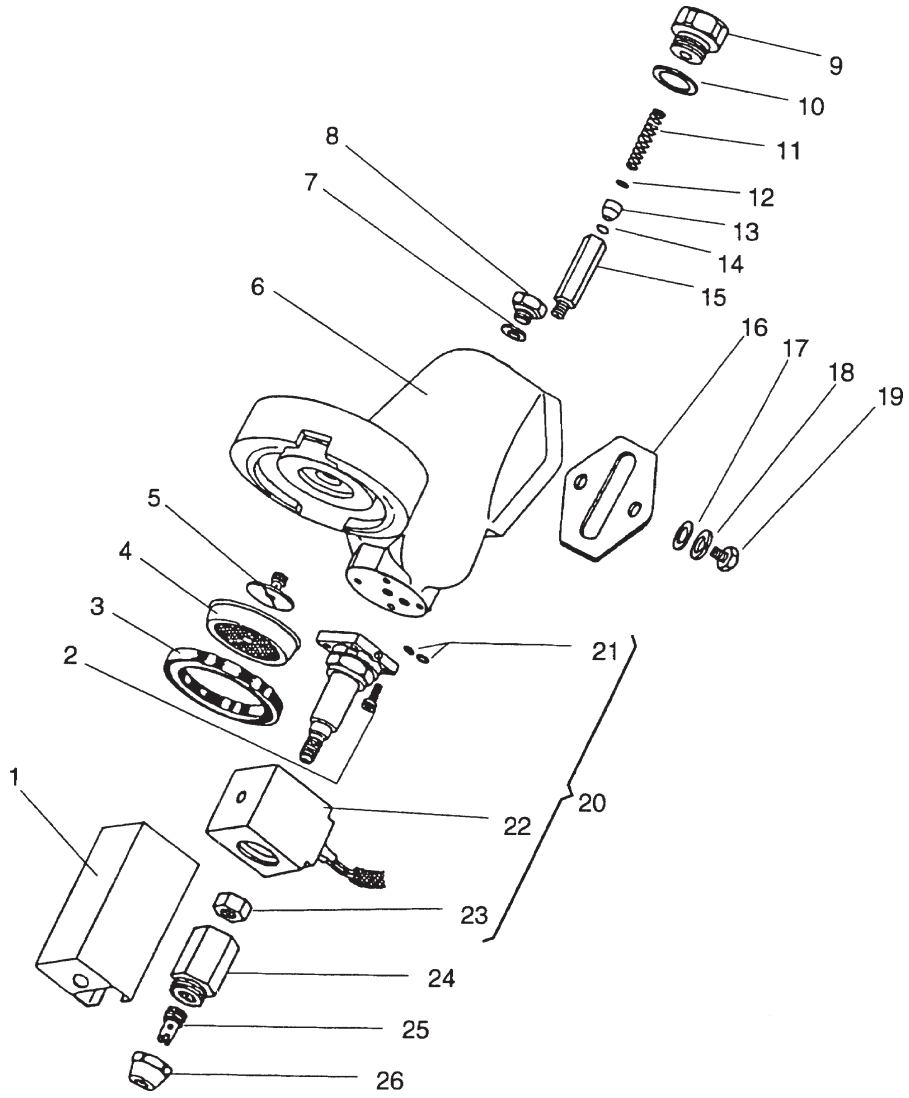


Figure	Description	Part Number
1	Cover, group solenoid discharge	23642.0000
2	Screw-handle	24005.0400
3	Filter holder seal gasket	23594.0000
4	Sprayhead screen	23593.0000
5	Sprayhead	23592.0000
6	Group head	23641.0000
7	Flat washer	24030.0000
8	Access plug-group head	23591.0000
9	Access plug-groups	23590.0000
10	Flat washer	22867.0000
11	Spring	23589.0000
12	Filter screen	23588.0000
13	Holder, filter screen	23587.0000

Figure	Description	Part Number
14	O-ring	23586.0000
15	Hex, seat group solenoid	23585.0000
16	Gasket, group head to mtg. bkt.	23584.0000
17	Flat washer	24028.0000
18	Lock washer	24028.0300
19	Screw	24008.0001
20	Solenoid assembly 110 v.	23597.0000
21	O-ring	23596.0000
22	Coil 110v.-refill valve	23595.0000
23	Nut	24049.0101
24	Hex ftg, group solenoid discharge	23583.0000
25	Orifice, group solenoid discharge	23582.0000
26	Nut	23581.0000

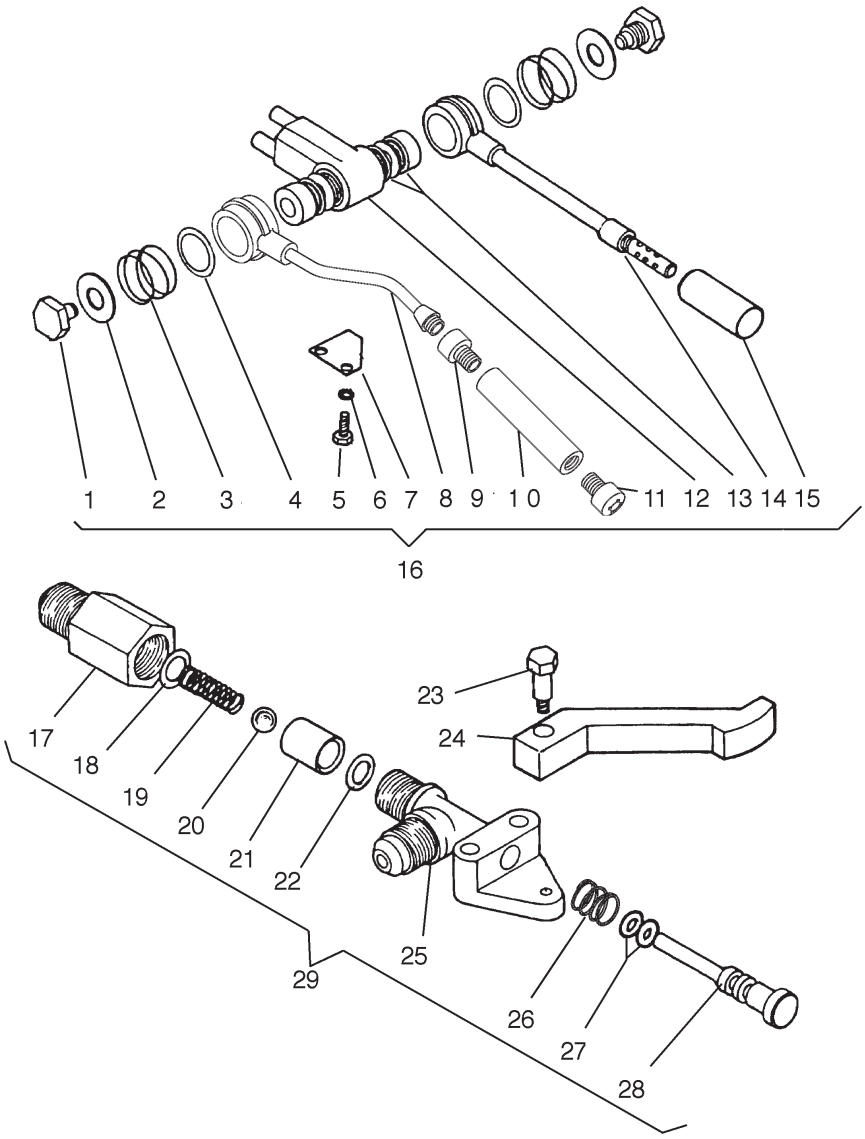


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Figure	Description	Part Number
1	Drain plug	23674.0000
2	Flat washer	24030.0002
3	Pressure spring	23573.0000
4	Flat washer	23936.0000
5	Screw	24005.0002
6	Lock washer	24025.0301
7	End tube support	23673.0000
8	Steam wand	24662.0000
9	Adapter	24513.0000
10	Steam tube	24465.0000
11	Nozzle (2 hole)	24464.0000
	Nozzle (4 hole)	24464.0001
12	Actuator shaft coupling	23662.0000
13	O-ring	23571.0000
14	Hot water rinse tube	23570.0000
15	Hot water rinse nozzle	22844.0000
16	Assy. steam & faucet wands	23574.0000
17	Hex ftg-hsg-steam faucet valve	23650.0000
18	Flat washer	22868.0000
19	Spring	24234.0000
20	Ball	23578.0000
21	Housing, ball-steam & faucet valve	23643.0000
22	O-ring	23596.0000
23	Shoulder bolt-steam-faucet lever	23577.0000
24	Lever	24743.0000
25	Actuator shaft coupling	23665.0000
26	Spring	24442.0000
27	O-ring	23575.0000
28	Plunger shaft	24567.0000
29	Assy.-steam & faucet valve	23580.0000

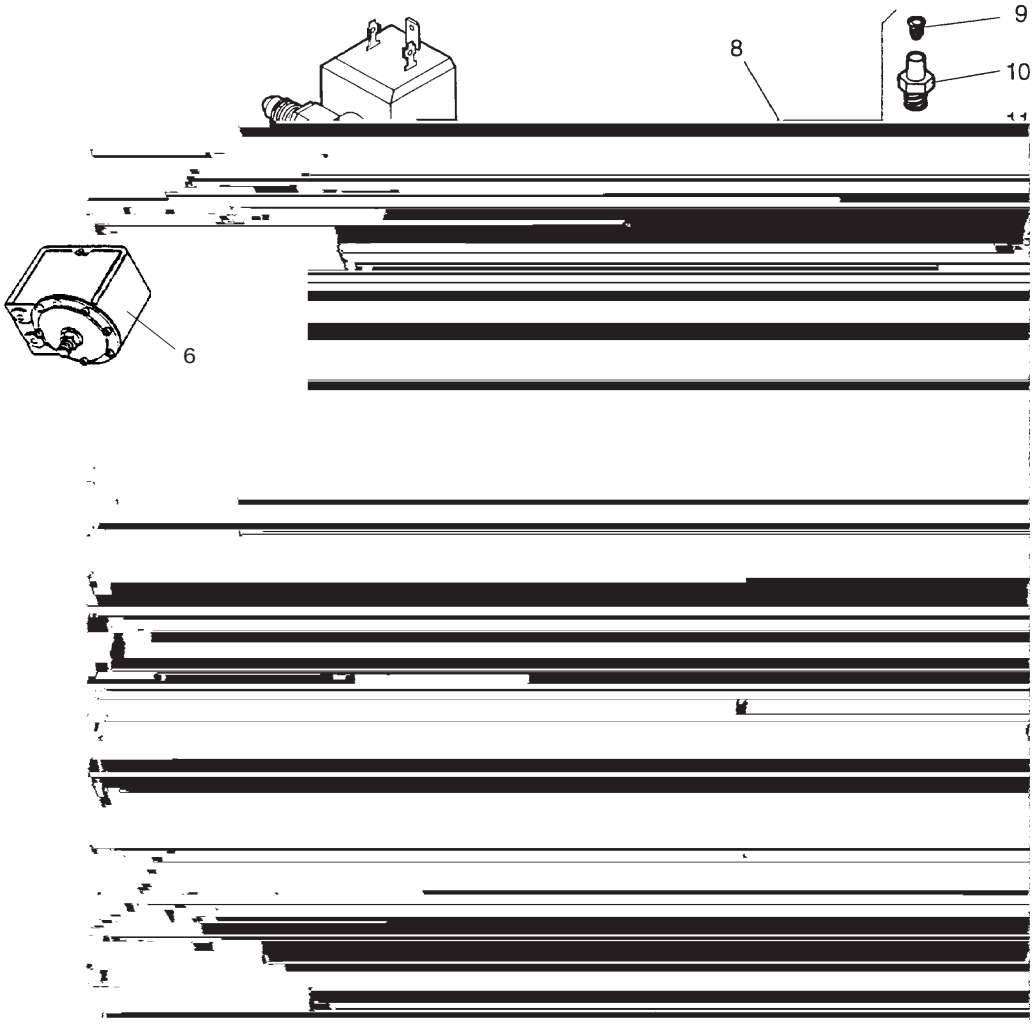

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Figure	Description	Part Number
1	Refill solenoid end fitting-outlet	23569.0000
2	Refill solenoid-complete 110v.	23568.0000
3	Refill solenoid end fitting-inlet	23567.0000
4	Knob, selector switch	23566.0000
5	Screw	23935.0000
6	Pressure switch-heater control	22574.0000
7	Main switch	23564.0000
8	Plumbing assy.-water inlet	23563.0000
9	Relief valve adjuster	23562.0000
10	Pressure vent cap nut	23561.0000
11	O-ring	23560.0000
12	Spring	23579.0000
13	Seat holder-relief valve	23559.0000
14	Rubber seat-plunger	23557.0000
15	Pressure vent housing	23558.0000
16	O-ring	23555.0000
17	Spring	23556.0000
18	Ball, check valve	23578.0000
19	Sleeve, check valve	23643.0000
20	O-ring	23596.0000
21	Pressure vent cap nut	23554.0000
22	Pump assy. 110v.-complete	23553.0000
23	Pump outlet fitting	23540.0000
24	Pump impeller unit	22713.0000
25.	Pump, mounting clamp	23639.0000
26	Capacitor-motor 110v	23552.0000
27	Motor assy. 110v.	23664.0000
28	Screw-handle	24005.0003
29	Flat washer	24025.0000
30	Nut	24045.0101

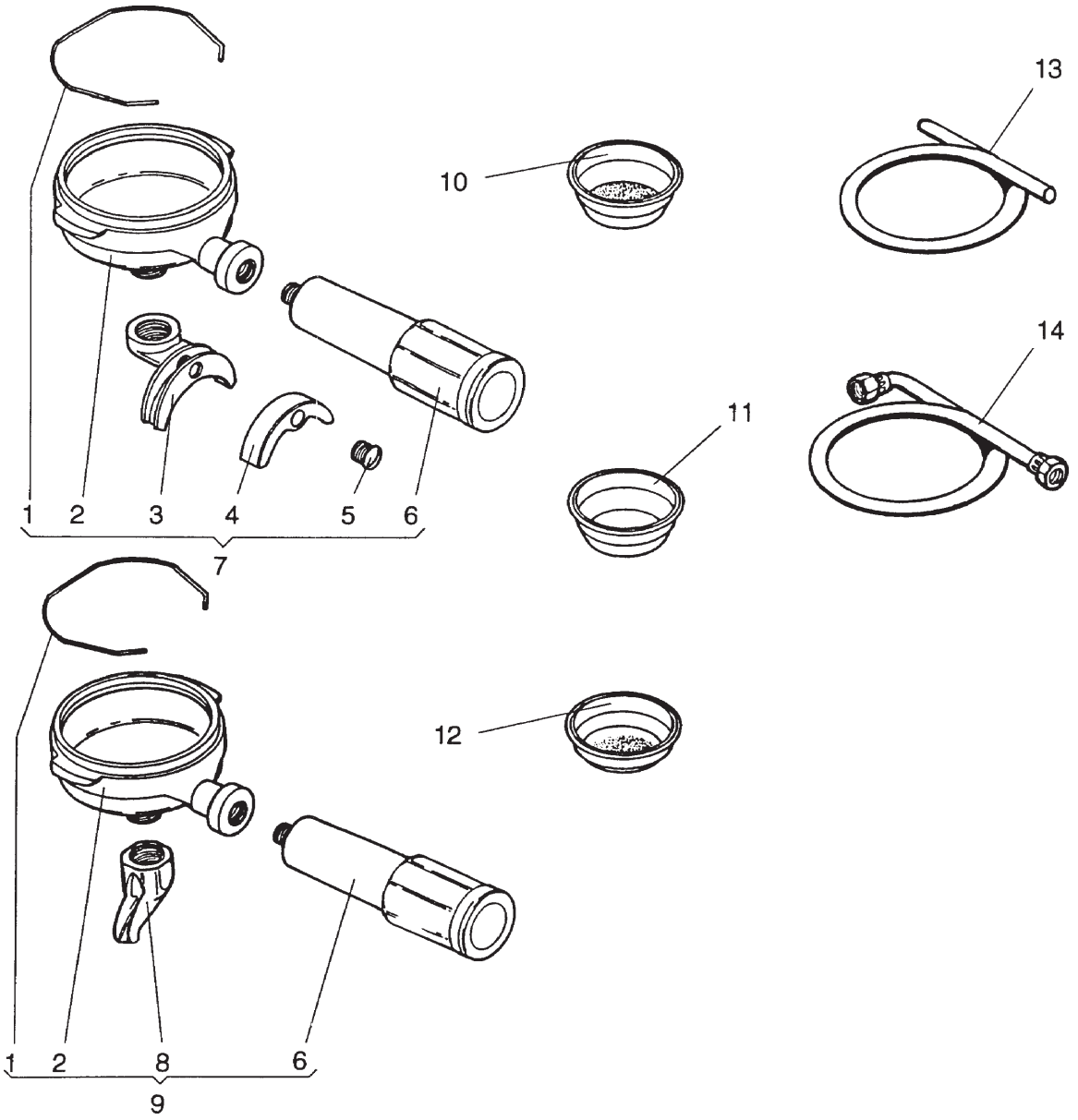

Figure	Description	Part Number
1	Filter support wire	22819.0000
2	Filter holder	23632.0000
3	Dispense nozzle-2 cups	23551.0000
4	Cover, dual dispenser nozzle	23550.0000
5	Screw	23932.0000
6	Handle	23644.0000
7	Complete filter holder assy-2 cup	23549.0000
8	Dispense nozzle-1 cup	23547.0000

Figure	Description	Part Number
9	Complete holder assy. -1 cup	23548.0000
10	Filter-2 cup	23546.0000
11	Pressure test cup (no holes)	23544.0000
12	Filter-1 cup	23545.0000
13	Drain hose	22603.0000
14	Rubber seal washer-hose	22638.0000

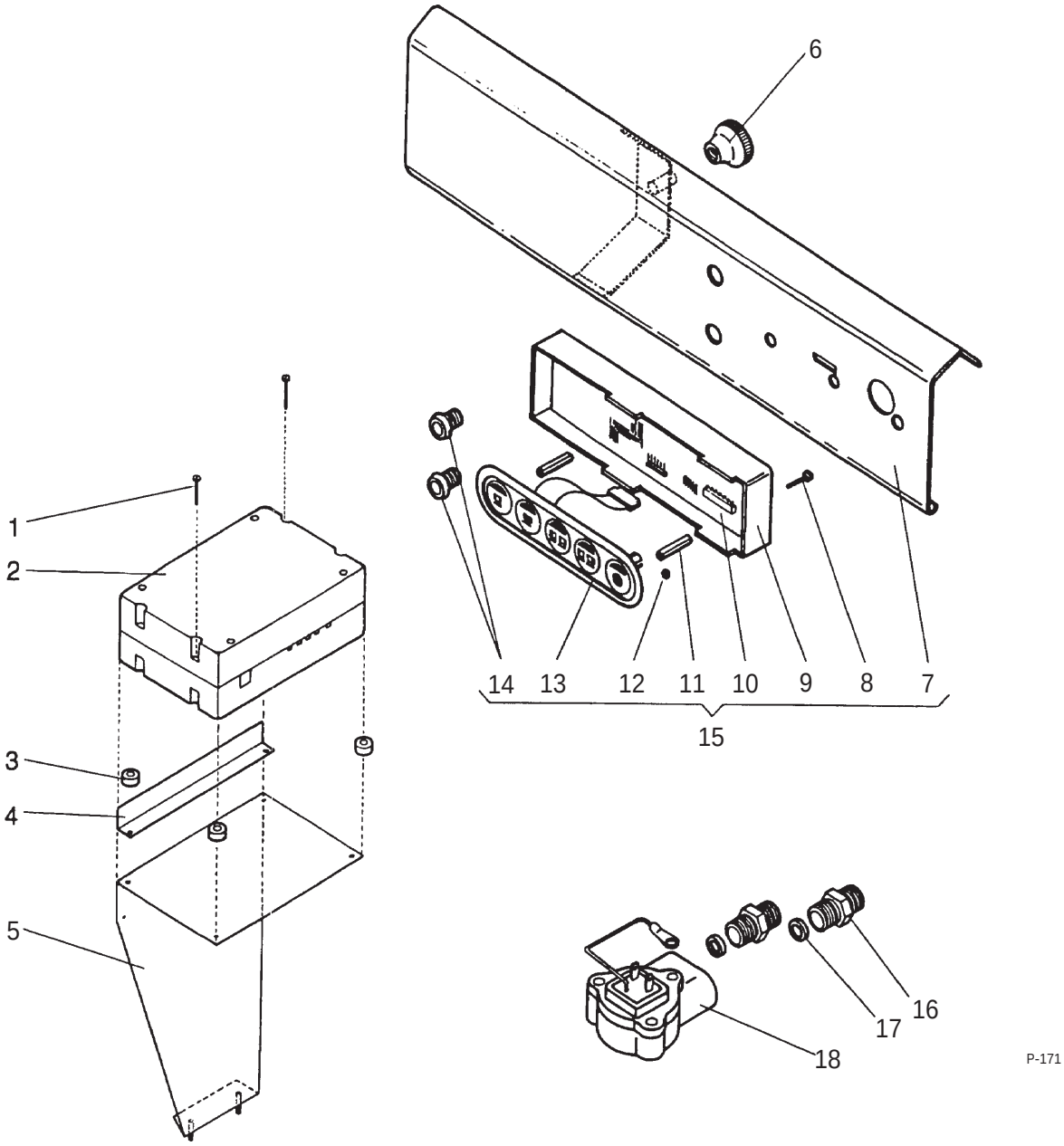

Figure	Description	Part Number
1	Screw	24004.0700
2	Electronic module 110v.	24798.0000
3	Mounting nut, electronics model	24045.0101
4	Cable protector, electronics model	23631.0000
5	Module bracket support	23627.0000
6	Thumb nut, front panel ctr. mount	23542.0000
7	Front hood panel	23661.0000
8	Screw	24004.0702
9	Circuit board assy.	23670.0000
10	Module, dose switch automatic	23626.0000
11	Switch select panel standoff	23671.0000
12	Nut	24044.0100
13	Switch select panel	22695.0000
14	Bezel, indicator lights	23541.0000
15	Complete front hood panel	23625.0000
16	Fitting, flowmeter	23624.0000
17	Flat washer	22868.0000
18	Flow meter complete	22775.0000
19	Ribbon cable	24811.0000

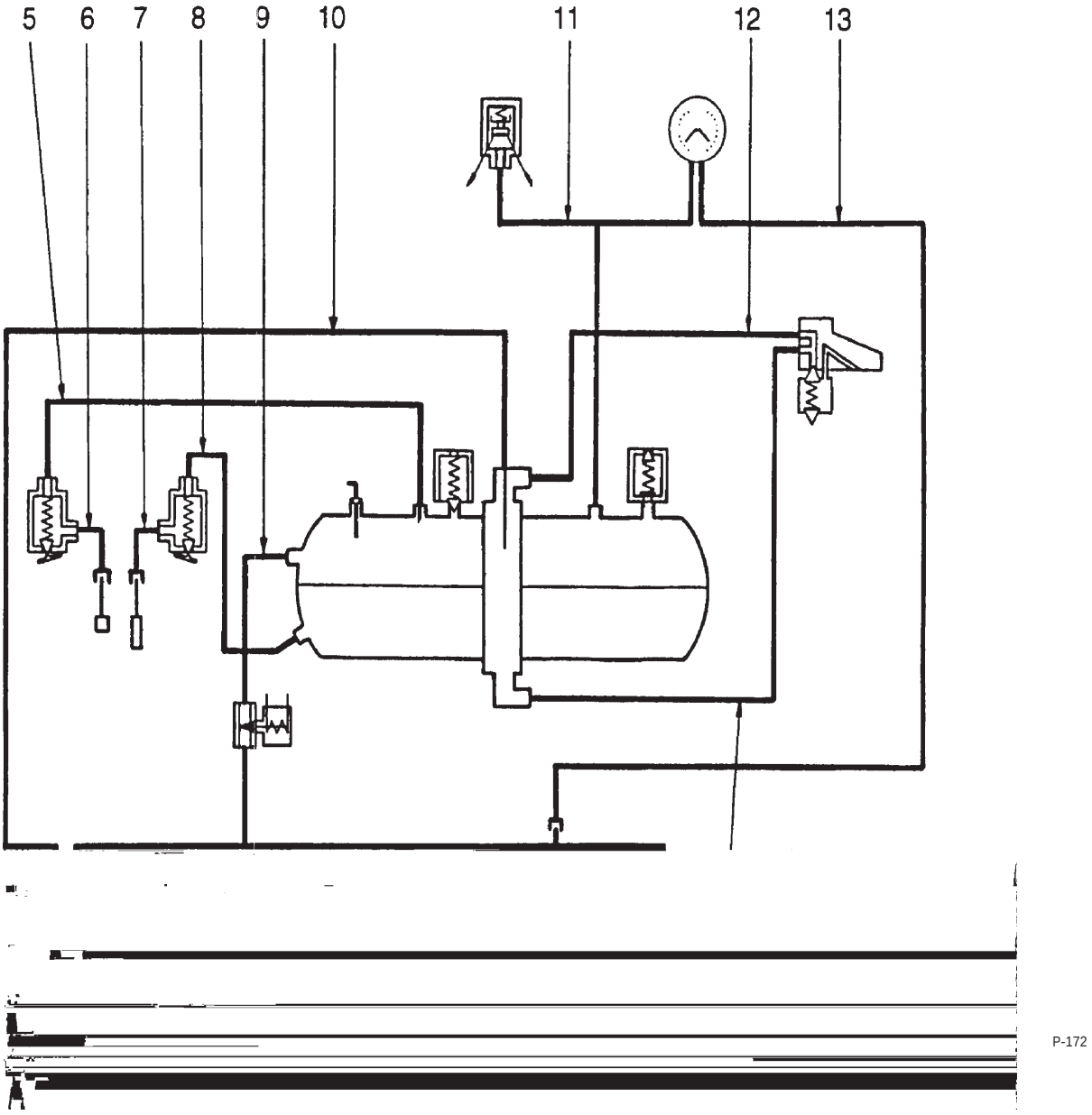

Figure	Description	Part Number
1	Copper tube, pump inlet	23623.0000
2	Copper tube, pump out to rlf. chk.	23622.0000
3	Lower copper tube, exch. to grp.	23621.0000
4	Copper tube, rlf./chk. to flowmeter	23620.0000
5	Copper tube, tank to steam valve	23619.0000
6	Copper tube, st. valve to swivel ftg.	23618.0000
7	Copper tube, faucet to swivel ftg.	23617.0000
8	Copper tube, tank to faucet valve	23616.0000
9	Copper tube, refill solenoid to tank	23615.0000
10	Copper tube, flowmeter to exch.	23614.0000
11	Copper tube-pressure switch	23613.0000
12	Upper copper tube, exch. to group	23612.0000
13	Copper tube, press. gauge-pump	23611.0000